Abstract

Process for producing low-molecular olefins by pyrolysis of hydrocarbons comprising mixing of feedstock with steam-diluent, preheating the resulting mixture, rapid heating the said mixture up to pyrolysis temperature and maintaining this temperature inside reactor during residence time, quenching product stream and subsequent fractionation of products. The reactor has an annular work cavity where stationary blades and rotatable work blades are located. A ring vortex flow is created and maintained in the work cavity when the work blades are rotated. A heat needed for pyrolysis is generated due to hydrodynamic drag of rotated work blades. Heating the mixture up to pyrolysis temperature is performed by mixing with hot process stream recirculated in the work cavity for a negligible time in comparison with the residence time. The process enables increase of the low-molecular olefins yield.